

# PATENT COOPERATION TREATY

TRANSLATION

From the  
INTERNATIONAL SEARCHING AUTHORITY

PCT

WRITTEN OPINION OF THE  
INTERNATIONAL SEARCHING AUTHORITY

(PCT Rule 43bis.1)

To:

Date of mailing  
(day/month/year)

Applicant's or agent's file reference

**04-124PCT**

**FOR FURTHER ACTION**

See paragraph 2 below

International application No.

**PCT/JP2005/002515**

International filing date (day/month/year)

**10.02.2005**

Priority date (day/month/year)

**13.02.2004**

International Patent Classification (IPC) or both national classification and IPC

Applicant

**MITSUBISHI HEAVY INDUSTRIES, LTD.**

1. This opinion contains indications relating to the following items:

- ☒ Box No. I Basis of the opinion
- ☐ Box No. II Priority
- ☐ Box No. III Non-establishment of opinion with regard to novelty, inventive step and industrial applicability
- ☒ Box No. IV Lack of unity of invention
- ☒ Box No. V Reasoned statement under Rule 43bis.1(a)(i) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement
- ☐ Box No. VI Certain documents cited
- ☐ Box No. VII Certain defects in the international application
- ☒ Box No. VIII Certain observations on the international application

2. **FURTHER ACTION**

If a demand for international preliminary examination is made, this opinion will be considered to be a written opinion of the International Preliminary Examining Authority ("IPEA") except that this does not apply where the applicant chooses an Authority other than this one to be the IPEA and the chosen IPEA has notified the International Bureau under Rule 66.1bis(b) that written opinions of this International Searching Authority will not be so considered.

If this opinion is, as provided above, considered to be a written opinion of the IPEA, the applicant is invited to submit to the IPEA a written reply together, where appropriate, with amendments, before the expiration of 3 months from the date of mailing of Form PCT/ISA/220 or before the expiration of 22 months from the priority date, whichever expires later.

For further options, see Form PCT/ISA/220.

3. For further details, see notes to Form PCT/ISA/220.

Name and mailing address of the ISA/JP

Authorized officer

Facsimile No.

Telephone No.

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Box No. I

Basis of this opinion

1. With regard to the language, this opinion has been established on the basis of the international application in the language in which it was filed, unless otherwise indicated under this item.  
☐ This opinion has been established on the basis of a translation from the original language into the following language  
\_\_\_\_\_, which is the language of a translation furnished for the purposes of international search (under Rule 12.3 and 23.1(b)).
2. With regard to any nucleotide and/or amino acid sequence disclosed in the international application and necessary to the claimed invention, this opinion has been established on the basis of:
  - a. type of material  
☐ a sequence listing  
☐ table(s) related to the sequence listing
  - b. format of material  
☐ in written format  
☐ in computer readable form
  - c. time of filing/furnishing  
☐ contained in the international application as filed.  
☐ filed together with the international application in computer readable form.  
☐ furnished subsequently to this Authority for the purposes of search.
3. ☐ In addition, in the case that more than one version or copy of a sequence listing and/or table(s) relating thereto has been filed or furnished, the required statements that the information in the subsequent or additional copies is identical to that in the application as filed or does not go beyond the application as filed, as appropriate, were furnished.
4. Additional comments:

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Box No. IV

Lack of unity of invention

1. ☐ In response to the invitation (Form PCT/ISA/206) to pay additional fees the applicant has:
- ☒ paid additional fees
- ☐ paid additional fees under protest
- ☐ not paid additional fees
2. ☐ This Authority found that the requirement of unity of invention is not complied with and chose not to invite the applicant to pay additional fees.
3. This Authority considers that the requirement of unity of invention in accordance with Rules 13.1, 13.2 and 13.3 is
- ☐ complied with
- ☒ not complied with for the following reasons:

There are at least four inventions 1-4 as below.

Invention 1: Regarding claims 1-3, 6-9, 12-14, 17-21 and 27-32, an invention using a mechanical treatment, and a chlorination or oxidant adding treatment.

Invention 2: Regarding claims 4, 5, 10, 11, 15, 16, 22-26 and 33-35, an invention using a microbe isolation treatment, and a chlorination or oxidant adding treatment.

Invention 3: Regarding claims 36-42, an invention relating to a detoxification treatment provided on land.

Invention 4: Regarding claims 43-50, an invention relating to a detoxification treatment provided on the sea.

4. Consequently, this opinion has been established in respect of the following parts of the international application:
- ☒ all parts
- ☐ the parts relating to claims Nos. \_\_\_\_\_

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Box No. V	Reasoned statement under Rule 43bis.1(a)(i) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement		
1. Statement			
Novelty (N)	Claims	<u>1-42, 44-50</u>	YES
	Claims	<u>43</u>	NO
Inventive step (IS)	Claims		YES
	Claims	<u>1-50</u>	NO
Industrial applicability (IA)	Claims	<u>1-50</u>	YES
	Claims		NO
2. Citations and explanations:			
<p>Document 1: JP 63-100995 A (Ebara Influenza K.K.) 06 May 1988</p> <p>Document 2: JP 2001-170638 A (Sanyo Electric Co., Ltd.), 26 February 2001</p> <p>Document 3: JP 4-322788 A (Mitsubishi Heavy Industries, Ltd.), 12 November 1992</p> <p>Document 4: JP 2003-200156 A (K.K. Kaiyo Kaihatsu Gijutsu Kenkyusho) 15 July 2003</p> <p>Document 5: JP 6-91283 A (Hitachi Kidenkogyo K.K. ), 05 April 1994</p> <p>Document 6: JP 2004-25040 A (Hitachi, Ltd.), 29 January 2004</p> <p>Claims 1-3, 6-9, 12-14, 17-21 and 27-32</p> <p>The inventions relating to claims 1-3, 6-9, 12-14, 17-21 and 27-32 do not appear to involve an inventive step based on documents 1-4.</p> <p>To the invention described in document 1, adopting the technologies described in documents 2 and 3 that belong to the same technical field of sterilization, and combining a mechanical treatment with a chlorination and oxidant adding treatment could be easily conceived of by a party skilled in the art.</p> <p>Also, provision of sterilization more than once generally achieves sterilizing effects in accordance with each treatment. Thus, providing a chlorination and oxidant adding treatment to microbe damaged by a mechanical treatment so as to achieve sterilizing effects that cannot be achieved only by a mechanical treatment, or only by a chlorination and oxidant adding treatment would be obvious based on document 1 disclosing a technology of damaging microbe by providing a mechanical treatment in advance so as to effectively perform a ultraviolet sterilization treatment.</p> <p>A sterilization technology of measuring remaining chlorine, circulating some water subject to treatment, and applying chlorination by electrolysis is disclosed in document 2.</p> <p>Also, a technology of sterilizing ballast water using a chlorination and/or oxidant adding treatment is disclosed in document 3.</p> <p>Further, a mechanical treatment for using a slit and damaging microbe is disclosed in document 4.</p> <p>A technology of removing remaining chlorine by activated carbon and/or catalyst and using natural energy as a power source are such commonly carried out matters that there is no need to cite documents.</p>			

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Box No. VIII Certain observations on the international application

The following observations on the clarity of the claims, description, and drawings or on the question whether the claims are fully supported by the description, are made:

Claims 1-35, 37-42 and 44-50

Performing a chlorination and/or oxidation after a mechanical treatment, and performing chlorination and oxidation after a microbe isolation treatment are not clear.

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Supplemental Box

In case the space in any of the preceding boxes is not sufficient.

Continuation of: Box V

Claims 4, 5, 10, 11, 15, 16, 22-26 and 33-35

The inventions relating to claims 4, 5, 10, 11, 15, 16, 22-26 and 33-35 do not appear to involve an inventive step based on documents 1-5.

Using an invention described in document 5 of filtering water in a water district, and then performing an ozone treatment to phytoplankton that has passed therethrough for sterilization of a ballast tank that reserves water from a water district as ballast water after extinction of plankton and the like (document 3) is found not particularly difficult.

Also, the above inventions are combination of a plurality of sterilization technologies as appropriate; therefore, adopting a mechanical treatment (documents 1 and 4) and chlorination (documents 2 and 3) would not be particular for a party skilled in the art.

Claims 36-42

The invention relating to claim 36 does not appear to involve an inventive step based on document 6, and the inventions relating to claims 37-42 do not appear to involve an inventive step based on documents 1-6.

In the invention described in document 6 of purifying water in a water district in which ballast water is injected by sterilization and the like, supplying the same as ballast water into ships and the like, purifying the ballast water by sterilization the like around the water district from which the ballast water is to be discharged, and discharging the same to the water district, providing a purification facility on land is a mere matter of design variation to specify the same.

See documents 1-5 for sterilization means.

Claims 43-50

The invention relating to claim 43 does not appear to be novel based on document 6.

Based on document 6 (Figs. 1-4), providing a purification facility on the sea is found to be disclosed.

The inventions relating to claims 44-50 do not appear to involve an inventive step based on documents 1-6.

The invention described in document 6 is specified by combining sterilization means (see documents 1-5) as appropriate.